

Cerebral Thrombo-Angiitis Obliterans in a Patient with Marijuana Use

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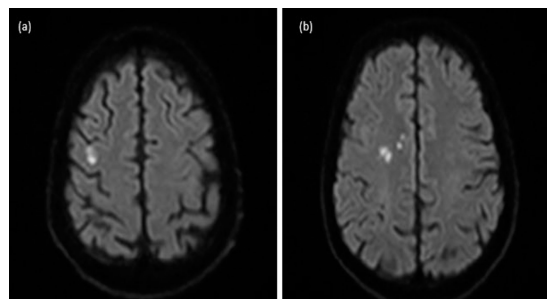


Figure 1. MRI brain demonstrating foci of restricted diffusion within the right frontal lobe (a) and the right frontal parietal cortical junction (B) on DWI sequence.

A 50-year-old man with past medical history significant for hypertension, cigarette smoking (1.5 packs for 30 years), marijuana use (inhalational use daily for 25 years), alcohol use and previous stroke presented with acute onset left sided hemiparesis. The patient did not report any history of claudication in the past but reported left upper and lower extremities feeling cooler as compared to the right side for over a year. On laboratory investigations, C-reactive protein was 2.63 mg/dl, erythrocyte sedimentation rate was 26 mm/hour, ANCA was positive (1:160), lipid profile (triglycerides, and total cholesterol) was within normal limits except for low HDL cholesterol level (22 mg/dl). MRI brain demonstrated multiple areas of restricted diffusion within the right frontal lobe and the right frontal parietal cortical junction (Figure 1) consistent with acute multifocal infarcts in the distal right middle cerebral artery distribution. A catheter-based diagnostic cerebral angiogram was performed which demonstrated occlusion of the right internal carotid artery 3–4 cm above the bifurcation [Figure 2(A)] along with high-grade stenosis of the right superficial temporal artery [Figure 2(B)] on the right common carotid artery and selective right external carotid injections, respectively. There was moderate severity of stenosis noted in the cavernous segment of the left internal carotid artery with slight dilation in the pre-sten-

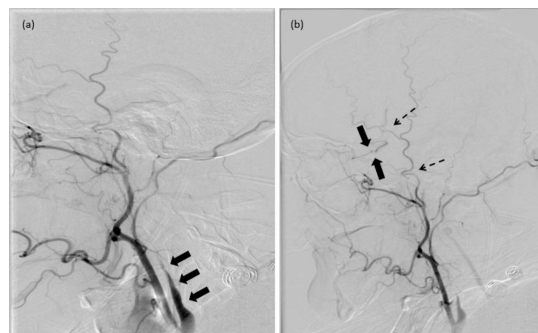


Figure 2. (A) Right common carotid injection showing of occlusion (black arrow) of the cervical segment of right internal carotid artery. (B) Selective right external carotid injection showing multifocal narrowing of right superficial temporal artery (dashed arrow) and reconstitution of the right internal carotid artery via lacrimal branches from the right internal maxillary artery (black arrow).

otic segment [Figure 3(A)]. The right middle and anterior cerebral arteries were noted to have collateral reconstitution via the left anterior communicating artery [Figure 3(B)]. There was occlusion of the left internal jugular vein at its origin from the left sigmoid sinus with anterior supplemental drainage via pterygoid venous plexus and retromandibular vein [Figure 4(A) and (B)], on left internal carotid injection during the venous phase. There was evidence of large vessel disease with focal stenosis of the left subclavian artery in the vicinity of thyrocervical trunk (Figure 5) and complete occlusion of the left vertebral artery from its origin (Figure 5). Distal branches of the right posterior cerebral artery were prominent and had filling via cortical anastomoses between the right posterior pericallosal artery and parietal cortical branches [Figure 6(A) and (B)]. Abdominal aortic run-off was performed which demonstrated significant peripheral vascular disease with occlusion of the right deep femoral artery at its origin and high-grade stenosis of superficial femoral artery, in addition to moderate stenosis of the left deep femoral artery and caliber

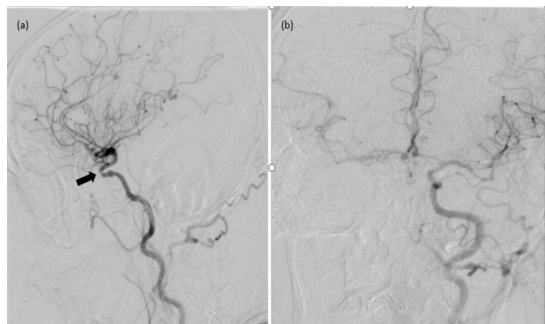


Figure 3. (A) Selective left common carotid artery injection showing moderate stenosis (black arrow) of cavernous segment of the left internal carotid artery with attenuation and diminution of caliber of distal branches of anterior and middle cerebral arteries. (B) Selective left internal carotid artery injection demonstrates filling of the right middle cerebral artery and the right anterior cerebral artery via the left anterior communicating artery.

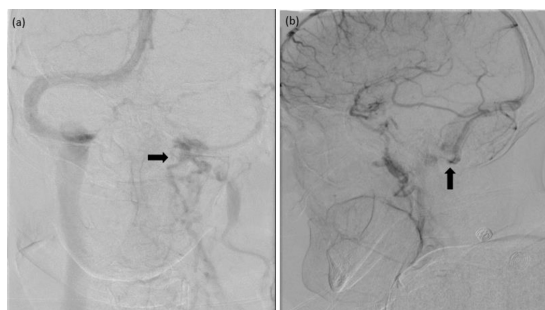


Figure 4 (A) and (B).Occlusion of the left internal jugular vein at its origin from left sigmoid sinus is seen on left internal carotid injection during the venous phase (black arrow).

diminution of the left superficial femoral artery (Figure 7). Angiographic findings were hence suggestive of diffuse medium and large-sized arterial disease in extracranial and intracranial arteries, subclavian and femoral arteries. Possible differentials included premature atherosclerosis and cerebral variant of thromboangiitis obliterans or systemic vasculitis. However, cerebral thromboangiitis obliterans was most likely due to longstanding history of cigarette and marijuana use and diffuse steno occlusive disease in multiple arterial beds and involvement of veins, and inconclusive vasculitis workup.

Discussion

Thromboangiitis obliterans, also called as Buerger's disease, is a nonatherosclerotic segmental inflammatory

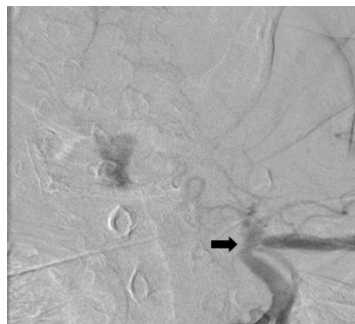


Figure 5. Left subclavian injection showing the left vertebral artery occlusion (black arrow) from its origin with moderate stenosis of the left subclavian artery near the origin of thyrocervical trunk.

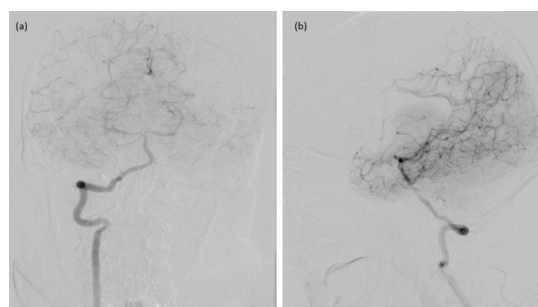


Figure 6 (A) and (B).Right vertebral injection demonstrating the right posterior cerebral artery distal branches filling via cortical anastomoses between the right posterior pericallosal artery and parietal cortical branches.



Figure 7. Abdominal aortic run-off showing occlusion of the right deep femoral artery at its origin and high-grade stenosis of superficial femoral artery at its origin (black arrow), in addition to moderate stenosis of the left deep femoral artery and caliber diminution of the left superficial femoral artery (dashed arrow).

disease that most commonly affects the small- and medium-sized arteries and veins of the upper and lower extremities [1]. There has been a strong association between use and exposure to tobacco and nontobacco products such as cocaine and cannabis use, with the development and progression of the disease [2]. However, there have been case reports highlighting the involvement of coronary, visceral, renal, and cerebral circulations [3–5]. Cerebrovascular involvement, although uncommon, presents with transient ischemic attacks and ischemic strokes with incidence ranging from 0.5% to 18% in patients with thromboangiitis obliterans [6,7]. Cerebral thromboangiitis obliterans is of two types; type 1 is associated with large artery changes and type 2 is associated with medium and small artery changes [8–10]. Angiographic findings previously reported in patients with thromboangiitis obliterans include: (1) multiple alternative areas of arterial occlusions in the distal segments of anterior, middle, and posterior cerebral arteries and proximal internal carotid artery; (2) extensive pathological collateral vessels around the occluded segment, resembling the “tree root” or “corkscrew” vessels; and (3) exaggerated tapering of middle cerebral artery [7–12].

References

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